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Case Report

INVESTIGATION OF LEGIONNAIRE DISEASE IN A LONG-TERM CARE FACILITY – QUEBEC

Introduction

On 17 February 1997, a case of Legionnaire disease was reported to the *Direction de la santé publique de Montréal-Centre* following the death of an 87-year-old male patient residing in a long-term care facility (LTCF). An autopsy on 8 February indicated the cause of death as bronchopneumonia. A diagnosis of Legionnaire disease was confirmed following biopsy of a pulmonary tissue culture which revealed an abundant growth of *Legionella pneumophila*.

No other case of pneumonia had been reported in the weeks prior to the death of this patient. Since the patient had been confined to his room because of dyspnea and serious eye problems, an investigation was undertaken in an attempt to identify the source of contamination.

Medical history

The patient had an extensive medical history, including atherosclerotic disease with cardiac insufficiency, a chronic pulmonary obstructive disease, a fibrothorax resulting from silicosis and from prior tuberculosis and bronchiectasis, and severe respiratory insufficiency (galloping dyspnea). The patient had received influenza vaccine on 14 October 1996.

A few days before his death, the patient was on oxygen (4 litres per minute) via a portable condenser and was being treated with several cardiac drugs. Clinically, he presented with marked breathing problems accompanied by fatigue, lack of appetite, and fever. On 7 February, he was placed on cefuroxime (Ceftin®) on the assumption that he was suffering from a bronchiectasis infection.

Environmental investigation

The patient had been residing in a LTCF for several months. The facility could accommodate 157 patients in private rooms located on three floors. The window in the patient's room was always closed; no air ventilation duct was located near the window. The building had no central ventilation system, and no plumbing maintenance had been undertaken recently.

A portable condenser provided continous oxygen to the patient. It contained a water tank (to ensure humidification of the oxygen) that was connected to tubing leading to a nasal cannula. There was no humidifier in the patient's room. The patient had not participated in any social activities in the 2 weeks before his death. He received bed baths only.

The LTCF procedures for maintenance of the condenser were to rinse the water tank, which contained non-sterile demineralized water, with hot tap water, and to clean it from time to time with hot water and a green soap; it was never disinfected. The manufacturer's instructions specified that the tank should be cleaned daily with a hot water and detergent solution, then rinsed and disinfected with a solution of one part white vinegar and three parts hot water (germicidal solution), and, finally, rinsed with hot tap water prior to being refilled with distilled water.

Five environmental samples were taken on 25 February as follows:

1) **hot water from the tap** (sample 1: stagnant overnight water; sample 2: swab from tap following removal of filter);

2) **humidifier tank of the oxygen condenser** (sample 3: in spite of the dryness of the tank and tubing, an attempt was made to dislodge some of the dried biologic film with sterilized water);

3) **water heater** (sample 4: tap water from the sink a few metres from the water heater as there was no direct connection with underground pipes to allow a direct sample; temperature of this water was taken); and

4) **water-heating system** (sample 5: water from the closed-circuit water-heating system, which could reach a temperature of 95° C).

Results

The water temperature, as measured at the base of the water heater, was maintained at 57° C to 59° C and at 54° C when the water was left running for three minutes, all of which conformed to published recommendations[1,2].

Isolates of *Legionella* spp. were found in two cultures from the environmental samples. Nine colonies were found in the sample from the water heater (sample 4) and one in the sample from the humidifier tank of the oxygen condenser (sample 3). Characterization indicated *L. pneumophila*, serogroup 1 (Lp1), serotype Heysham-1, excluding the Mab-2 marker. The Mab-2 marker is an Lp1 surface epitope, recognized by a particular monoclonal antibody (Mab-2) and is associated with an increased pathogenicity[3].

However, the characterization of the clinical strain indicated *L. pneumophila*, serogroup 1 (Lp1), serotype Philadelphia-1, with a Mab-2 marker. A cell that reacted positively to the immuno-fluorescence technique for the influenza A virus was also detected.

Discussion

When a case of Legionnaire disease is reported to public-health officials, the case's workplace and the time spent in a hospital or hotel during the 2 weeks prior to the onset of the disease is investigated. The assumption is that one is dealing with a sentinel case, and that the investigation will identify associated cases and a common environmental source of the infection[1]. In general, the majority of reported cases of Legionnaire disease are sporadic[4]. Investigating the environmental source of infection is usually not recommended for an isolated case, unless one is dealing with a nosocomial infection[2,5]. A health-care institution, such as an LTCF, can harbour potential sources of Legionnaire disease, and such an institution usually accepts patients who are at high risk for acquiring the infection[1].

For this particular case, it was decided to carry out an epidemiologic and environmental investigation for the following reasons.

- It was evident that the disease had been acquired in the LTCF (nosocomial Legionnaire disease).
- It was necessary to exclude the possibility that an environmental source could expose other residents to the infection (enclosed area, increased vulnerability of residents).
- It was necessary to ensure that preventive mesures were in place (i.e. adequate water-heater temperature).

In spite of the dissimilarity between the environmental and clinical strains, the most likely source of infection was the oxygen condenser. In order to establish any connection and molecular homology between the environmental and clinical strains, phenotypical methods such as serogrouping, serotyping, or subgrouping were used (the use of monoclonal antibodies reveals the existence of 12 subtypes of *L. pneumophila*, serogroup 1)[6]. The differences between the subtypes of clinical and environmental strains found during the investigation can be explained by i) fluctation over time in the proportion of subtypes colonizing the water system, and ii) the delay in obtaining an envionmental sample, in particular, when the time between the death of the patient and the time at which the sample was taken from the tank of the oxygen condenser is considered.

The following six factors helped to piece together the events.

1. Various sources of *Legionella*-contaminated water have been linked to nosocomial cases of Legionnaire disease such as hot water distribution systems (taps, showers, tubs), portable respiratory treatment equipment, and individual humidifiers[1,2]. The investigation showed that the hot water formed a pool for contamination by *Legionella* present in water from the water heater.

2. Portable respiratory equipment provides a preferred growth environment for *Legionella* (production of a semi-permanent biologic film) and quickly gives rise to a pool of infectious bacteria. Within 24 hours, *Legionella* spp. can multiply sufficiently to become a possible source of infection for patients undergoing respiratory therapy[7]. It is possible that the contamination of the tank of the humidifier acted as an amplifier. In fact, the tank was full of non-sterile water; it was rinsed with hot tap water and occasionally cleaned, but it was never disinfected.

3. Contaminated aerosols have been associated with Legionnaire disease[1,7]. By producing contaminated aerosols, the humidifier of the portable condenser became the mechanism by which Legionnaire disease was transmitted to the patient.

4. The strain transmitted to the patient was pathogenic (Lp1, Mab-2 marker).

5. Inhalation of *L. pneumophila* led to the bacteria infecting the lungs.

6. Finally, the host was receptive to the infection and presented a number of characteristics which rendered him prone to the illness. The presence of a positive influenza A virus cell, confirmed by immunofluorescence, suggests that the patient, while having been vaccinated for influenza, had nonetheless been infected by the virus and then superinfected by *L. pneumophila*.

The investigation detected no other possible source of infection.

Recommendations

The following preventative measures were recommended[1,2,8,9].

1. Use sterile water in the tank of any type of oxygen condenser used for respiratory tract treatment; clean and disinfect the equipment on a daily basis; use sterile water for any type of activity associated with respiratory therapy such as the rinsing of tubes or tank; and fill the tank just prior to use.
2. Use vapour humidifiers rather than humidifiers that give rise to the formation of aerosols from non-sterile water (e.g. ultrasonic humidifiers).
3. Maintain the water-heater temperature at a minimum of 55° C and make sure that the hot-water temperature remains above 50° C at all distribution points.

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International Notes

THE 50TH ANNIVERSARY OF WHO

A summary of the progress that has been made during the past few decades in controlling some major infectious diseases was presented in an earlier issue (CCDR 1998;24:111-12). The following summarizes the status of other communicable diseases that still remain as daunting public-health threats.

- Although there is hope of eliminating **measles** by the year 2000 in the Americas, it still kills nearly one million children a year.
- The latest in a series of **cholera** pandemics has been affecting much of the world since the 1960s, and the disease is still endemic in some 80 countries.
- The largest **yellow fever** epidemic ever recorded occurred in Ethiopia in 1960-1962, causing about 30,000 deaths. Since the late 1980s there has been a dramatic resurgence of yellow fever in Africa and the Americas.
- Recent environmental changes closely linked to water resources development and increases in population densities, have led to the spread of **schistosomiasis** to previously low-endemic or non-endemic areas. The disease remains endemic in 74 developing countries, mostly in Africa.
- There has been a significant recrudescence of **sleeping sickness** (African trypanosomiasis), particularly in central Africa, where reported cases have more than doubled over the past few years.
- **Chagas disease** occurs only in the Americas from Mexico to Argentina. The disease is targeted for elimination of transmission in the Southern Cone countries of Latin America by 2003.
- Once also a target for eradication, **malaria** remains a major threat, and the disease is endemic in 100 countries. The aim of the current global malaria strategy is to reduce mortality by at least 20% compared to 1995 in at least 75% of affected countries by the year 2000.
- Complacency towards **tuberculosis** in the past three decades led to a decline in control programs in many countries. The result has been a powerful resurgence of the disease, now estimated to kill 2.9 million people a year. One-third of the incidence in the past 5 years can be attributed to co-infection with HIV.

HEALTH CANADA - SANTÉ CANADA

Notifiable Diseases Summary (Preliminary) - Sommaire des maladies à déclaration obligatoire (Provisoire)

New Cases Reported from 1 January - 31 March 1998 - Nouveaux cas déclarés du 1 janvier - 31 mars 1998

Disease / Maladie	ICD-9 / CIM-9	Canada[1]			Newfoundland / Terre-Neuve			Prince Edward Island / Île du Prince Édouard			Nova Scotia / Nouvelle Écosse			New Brunswick / Nouveau-Brunswick			Quebec / Québec		
		J-M / J-M	Cum. 98	Cum. 97	J-M / J-M	Cum. 98	Cum. 97	J-M / J-M	Cum. 98	Cum. 97	J-M / J-M	Cum. 98	Cum. 97	J-M / J-M	Cum. 98	Cum. 97	J-M / J-M	Cum. 98	Cum. 97
AIDS - Sida	042-044	–	–	112	–	–	–	–	–	–	–	–	3	–	–	–	–	–	42
Amoebiasis - Amibiase	006	287	287	287	–	–	3	1	1	–	9	9	7	–	–	–	26	26	48
Botulism - Botulisme	005.1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–
Brucellosis - Brucellose	023	1	1	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Campylobacteriosis - Campylobactériose	008.41	1774	1774	1711	23	23	7	4	4	9	38	38	37	65	65	28	394	394	401
Chancroid - Chancre mou	099.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Chickenpox - Varicelle	052	2469	2469	2517	61	61	418	–	–	–	13	13	142	–	–	–	–	–	–
Chlamydia, genital - Chlamydiose génitale	099.81*	6852	6852	6332	84	84	71	36	36	33	306	306	277	195	195	200	988	988	1402
Cholera - Choléra	001	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Diphtheria - Diphtérie	032	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Giardiasis - Giardiase	007.1	816	816	949	10	10	8	1	1	1	15	15	19	21	21	49	112	112	180
Gonococcal Infections - Infections gonococciques[2]	098	965	965	932	1	1	–	1	1	–	22	22	23	5	5	8	62	62	123
Gonococcal Ophthalmia neonatorum - Ophtalmie gonococcique du nouveau-né	098.4	7	7	15	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–
Haemophilus influenzae B (all invasive) - (invasive) à H. influenzae B[3]	320.0,038.41*	14	14	11	–	–	–	–	–	–	–	–	–	–	–	–	5	5	4
Hepatitis A - Hépatite A	070.0,070.1	252	252	546	1	1	2	1	1	–	7	7	4	1	1	–	52	52	134
Hepatitis B - Hépatite B	070.2,070.3	285	285	531	–	–	1	–	–	–	5	5	14	3	3	1	87	87	235
Hepatitis C - Hépatite C		3528	3528	3153	11	11	9	2	2	–	100	100	81	36	36	32	376	376	138
Hepatitis non-A, non-B - Hépatite non-A, non-B		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Legionellosis - Légionellose	482.41	17	17	9	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1
Leprosy - Lèpre	030	2	2	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Listeriosis (all types) - Listériose (tous genres)	027.0,771.22*	9	9	6	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–
Malaria - Paludisme	084	60	60	83	–	–	–	–	–	–	1	1	–	1	1	–	22	22	28
Measles - Rougeole	055	8	8	287	–	–	7	–	–	–	–	–	–	–	–	–	2	2	1
Meningitis, pneumococcal - Méningite à pneumocoques	320.1	8	8	12	–	–	1	–	–	2	–	–	–	–	–	–	–	–	–
Meningitis, other bacterial - Autres méningites bactériennes[3,4]		22	22	33	3	3	2	–	–	–	1	1	1	1	1	2	–	–	–
Meningitis/Encephalitis viral - Méningite/encéphalite virale[5]		34	34	14	–	–	–	–	–	–	2	2	–	–	–	–	5	5	2
Meningococcal Infections - Infections à méningocoques	036	44	44	53	–	–	2	1	1	–	1	1	–	1	1	1	9	9	14
Mumps - Oreillons	072	29	29	111	–	–	–	–	–	–	–	–	–	1	1	–	1	1	5
Paratyphoid - Paratyphoïde	002.1-002.9	3	3	3	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–
Pertussis - Coqueluche	033	688	688	935	9	9	16	–	–	27	8	8	50	37	37	23	222	222	158
Plague - Peste	020	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Poliomyelitis - Poliomyélite	045	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rabies - Rage	071	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rubella - Rubéole	056	36	36	1410	–	–	–	–	–	–	–	–	–	–	–	–	1	1	1
Congenital Rubella - Rubéole congénitale	771.0	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Salmonellosis - Salmonellose[6]	003	1103	1103	933	30	30	8	7	7	8	31	31	26	33	33	32	164	164	203
Shigellosis - Shigellose	004	243	243	264	–	–	1	–	–	7	3	3	1	4	4	4	70	70	51
Syphilis, Congenital - Syphilis congénitale	090	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Syphilis, Early Latent - Syphilis, latente récente	092	2	2	2	–	–	–	–	–	–	–	–	–	–	–	–	1	1	1
Syphilis, Early Symptomatic - Syphilis, symptomatique récente	091	25	25	7	–	–	–	–	–	–	1	1	1	–	–	–	–	–	–
Other Syphilis - Autres syphilis	090,092-097	38	38	45	–	–	–	–	–	–	2	2	–	3	3	3	4	4	10
Tetanus - Tétanos	037	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Trichinosis - Trichinose	124	3	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Tuberculosis - Tuberculose	010-018	164	164	161	1	1	2	–	–	–	3	3	1	–	–	–	41	41	52
Typhoid - Typhoïde	002.0	11	11	6	–	–	–	–	–	–	–	–	–	–	–	–	2	2	4
Verotoxigenic E. coli - E. coli vérotoxinogènes	008.01*	71	71	65	–	–	–	2	2	–	2	2	2	1	1	–	25	25	26
Yellow Fever - Fièvre jaune	060	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

(1) Includes all 098 categories except 098.4.
(2) Includes buccal cellulitis or epiglottitis 464.3 in a child <5 years with no other causative organisms isolated.
(3) Includes encephalitis.
(4) All other categories except Haemophilus 320.2, Listeriosis 027.0, Meningococcal 036, Pneumococcal 320.1, and Tuberculosis 013.0.
(5) All categories except Measles 055, Mumps 072, Poliomyelitis 045, Rubella 056 and Yellow Fever 060.
(6) Excludes Typhoid 002.0 and Paratyphoid 002.1 to 002.9.
* ICD-9 codes used in the list may be incomplete. All 5 digit codes are unofficial and are for LCDC surveillance purpose only.
† May not represent national total if data from the provinces are incomplete.

(1) Comprend toutes les rubriques 098, sauf 098.4.
(2) Comprend cellulite buccale ou épiglottite 464.3 chez un enfant < 5 ans chez qui aucun autre microorganisme causal n'a été isolé.
(3) Comprend encéphalite
(4) Toutes les autres rubriques sauf à Haemophilus 320.2, listériose 027.0, à méningocoques 036, à pneumocoques 320.1 et tuberculeuse 013.0.
(5) Toutes les rubriques, sauf rougeole 055, oreillons 072, poliomyélite 045, rubéole 056 et fièvre jaune 060.
(6) Sauf typhoïde 002.0 et paratyphoïde 002.1 à 002.9.
* Les codes de la CIM-9 figurant dans la liste ne sont peut-être pas complets. Quant aux codes à 5 chiffres, ils ne sont pas officiels, ayant été établis uniquement aux fins de la surveillance du LLCM.
† Il se peut que ce chiffre ne représentente pas le total national si les données provenant des provinces sont incomplètes.

Notifiable Diseases Summary (Preliminary)(Concluded) - Sommaire des maladies à déclaration obligatoire (Provisoire)(fin)

New Cases Reported from 1 January - 31 March 1998 - Nouveaux cas déclarés du 1 janvier - 31 mars 1998

Disease Maladie	ICD-9 CIM-9	Ontario			Manitoba			Saskatchewan			Alberta			British Columbia Colombie-Britannique			Yukon			Northwest Territories Territoires du Nord-ouest		
		J-M J-M	Cum. 98	Cum. 97	J-M J-M	Cum. 98	Cum. 97	J-M J-M	Cum. 98	Cum. 97	J-M J-M	Cum. 98	Cum. 97	J-M J-M	Cum. 98	Cum. 97	J-M J-M	Cum. 98	Cum. 97	J-M J-M	Cum. 98	Cum. 97
AIDS-Sida	042-044	–	–	48	–	–	–	–	–	1	–	–	12	–	–	6	–	–	–	–	–	–
Amoebiasis - Amibiase	006	140	140	102	12	12	8	17	17	11	9	9	13	72	72	95	1	1	–	–	–	–
Botulism - Botulisme	005.1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Brucellosis - Brucellose	023	1	1	–	–	–	–	–	–	–	–	–	4	–	–	–	–	–	–	–	–	–
Campylobacteriosis - Campylobactériose	008.41*	705	705	626	50	50	34	41	41	38	133	133	108	318	318	420	–	–	2	3	3	1
Chancroid - Chancre mou	099.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Chickenpox - Varicelle	052	–	–	–	–	–	–	–	–	–	2183	2183	1844	–	–	–	20	20	29	192	192	84
Chlamydia, genital - Chlamydiose génitale	099.81*	2343	2343	1873	642	642	614	627	627	573	1310	1310	1044	–	–	–	32	32	38	289	289	207
Cholera - Cholera	001	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Diphtheria - Diphtérie	032	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–
Giardiasis - Giardiase	007.1	356	356	327	34	34	–	53	53	49	74	74	78	133	133	233	1	1	3	6	6	2
Gonococcal Infections - Infections gonococciques[1]	098	399	399	331	97	97	114	102	102	73	102	102	101	139	139	119	1	1	–	34	34	40
Gonococcal Ophthalmia neonatorum - Ophtalmie gonococcique du nouveau-né	098.4	6	6	15	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Haemophilus influenzae B (all invasive) - (invasive) à H. influenzae B[1]	320.0.038.41*	3	3	1	1	1	–	3	3	4	2	2	2	–	–	–	–	–	–	–	–	–
Hepatitis A - Hépatite A	070.0.070.1	57	57	132	16	16	22	5	5	103	20	20	67	87	87	81	–	–	1	5	5	–
Hepatitis B - Hépatite B	070.2.070.3	15	15	20	10	10	5	11	11	12	27	27	17	126	126	226	–	–	–	1	1	–
Hepatitis C - Hépatite C		1297	1297	1087	–	–	–	168	168	140	462	462	302	1034	1034	1344	32	32	14	10	10	6
Hepatitis non-A, non-B - Hépatite non A, non B		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Legionellosis - Legionellose	482.41	13	13	5	–	–	–	–	–	–	3	3	2	–	–	–	–	–	–	1	1	–
Leprosy - Lepre	030	1	1	3	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–
Listeriosis (all types) - Listériose (tous genres)	027.0,771.22	9	9	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Malaria - Paludisme	084	20	20	30	2	2	1	1	1	–	7	7	5	5	5	19	–	–	–	1	1	–
Measles - Rougeole	055	3	3	10	–	–	–	1	1	3	1	1	28	–	–	238	1	1	–	–	–	–
Meningitis, pneumococcal - Méningite à pneumocoques	320.1	–	–	–	2	2	–	1	1	1	3	3	3	2	2	4	–	1	1	–	–	–
Meningitis, other bacterial - Autres méningites bactériennes[1,4]		8	8	20	–	–	–	3	3	2	4	4	5	–	–	–	–	–	–	2	2	1
Meningitis/Encephalitis viral - Méningite/encéphalite virale[5]		1	1	–	3	3	2	8	8	1	11	11	8	4	4	1	–	–	–	–	–	–
Meningococcal Infections - Infections à méningocoques	036	19	19	21	3	3	2	–	–	5	8	8	8	1	1	–	1	1	–	–	–	–
Mumps - Oreillons	072	12	12	14	–	–	–	3	3	–	5	5	16	7	7	76	–	–	–	–	–	–
Paratyphoid - Paratyphoïde	002.1-002.9	1	1	1	1	1	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–
Pertussis - Coqueluche	033	146	146	118	40	40	15	99	99	87	76	76	215	50	50	215	–	–	6	1	1	5
Plague - Peste	020	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Poliomyelitis - Poliomyélite	045	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rabies - Rage	071	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rubella - Rubéole	056	8	8	4	10	10	1402	–	–	–	15	15	1	2	2	1	–	–	1	–	–	–
Congenital Rubella - Rubéole congénitale	771.0	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Salmonellosis - Salmonellose[6]	003	596	596	370	30	30	33	42	42	54	84	84	79	79	79	117	2	2	1	5	5	2
Shigellosis - Shigellose	004	106	106	72	31	31	29	11	11	35	16	16	13	–	–	51	1	1	–	1	1	–
Syphilis, Congenital - Syphilis, congénitale	090	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–
Syphilis, Early Latent - Syphilis, latente récente	092	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Syphilis, Early Symptomatic - Syphilis, symptomatique récente	091	–	–	5	–	–	–	–	–	–	–	–	–	24	24	1	–	–	–	–	–	–
Other Syphilis - Autres syphilis	090,092-097	21	21	32	–	–	–	–	–	–	7	7	–	–	–	–	1	1	–	–	–	–
Tetanus - Tétanos	037	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Trichinosis - Trichinose	124	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	3	–
Tuberculosis - Tuberculose	010-018	54	54	50	–	–	–	–	–	–	–	–	–	53	1	48	–	–	–	12	12	8
Typhoid - Typhoïde	002.0	8	8	1	1	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–
Verotoxigenic E. coli - E. coli vérotoxinogènes	008.01*	23	23	17	8	8	3	3	3	6	7	7	9	–	–	–	–	–	–	–	–	2
Yellow Fever - Fièvre jaune	060	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

SYMBOLS

transmissibles
. Not reportable
.. Not available
_ No cases reported

SIGNES

. À déclaration non obligatoire
.. Non disponible
_ Aucun cas déclarés

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- Epidemic **meningitis** is a recurrent problem in the "meningitis belt" of Africa stretching from Senegal to Ethiopia and including all or part of at least 15 countries with an estimated population of 300 million people. In unprecedented epidemics in 1996-1997, over 250,000 cases were reported.

- Increasing urbanization during the past decades has led to an increase in the prevalence of **dengue** and **dengue hemorrhagic fever**. These conditions are reported from over 100 countries in all WHO regions except Europe. Dengue, and in particular life-threatening dengue hemorrhagic fever, often occurs in massive epidemics. WHO's strategy continues to be based on prevention of transmission by controlling the vector.

- There is a disturbing increase in the number of **leishmaniasis** infections. The disease is related to developmental and environmental changes which increase exposure to the sandfly vector. More recently the combination of visceral leishmaniasis and AIDS has appeared with the spread of the AIDS pandemic.

- The **hepatitis B** virus infection (HBV) is a global problem, with 75% of the world's population living in areas where there are high levels of infection. More than two billion people worldwide have evidence of past or current HBV infection, and 350 million are chronic carriers of the virus.

- First identified in 1989, the **hepatitis C** virus (HCV) has now become a major public health problem. The incidence of HCV infection worldwide is not well known, but WHO estimates that 3% of the world population is infected with HCV and 170 million individuals are chronic carriers, at risk of developing liver cirrhosis and liver cancer.

- The appearance in humans of a new influenza virus, A(H5N1) in Hong Kong at the end of 1997, whose animal source is suspected to be poultry, was a reminder of the need for continuing strong global **influenza** surveillance.

During the past 20 years numerous new infectious diseases have emerged and others have re-emerged in many parts of the world. Of these, HIV, that causes **AIDS**, has had by far the most profound global impact. Others include Legionnaire disease, Ebola hemorrhagic fever, Rift Valley fever, monkeypox, and the new variant of Creutzfeldt-Jakob disease.

Source: *WHO Weekly Epidemiological Record, Vol 73, No 20, 1998.*

Erratum

STATEMENT ON INFLUENZA VACCINATION FOR THE 1998-1999 SEASON Vol. 24(ACS-2), page 5

The third sentence in the first paragraph under "**Recommended Use**" on page 5, should read as follows: "Children < 9 years of age require two doses of the split-virus influenza vaccine, with an interval of 4 weeks; however, ..."

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